

Hot Topics in Asset Management

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May 2017

12 Components of Asset Management

State Highway System Management Plan

- Inventory Definition
- Condition/Performance Assessment
- Performance Measures Development
- Performance Management
- Goal Setting
- Gap Analysis
- Target Allocations

Enterprise TAM Software (TAMS)

- Deterioration modeling (Where Applicable)
- Life Cycle Cost Analysis (Financial & Programmatic)
- Project Prioritization (MODA Approach)
- Risk Management (Risks to System Condition / Performance)
- Enterprise Software Development
- Relate System Needs to Assets to Projects
- Possible Green Project Scoring

Communications & Stakeholder Engagement

- TAMAC
- Mile Marker Series
- External Workshops
- Internal Presentations

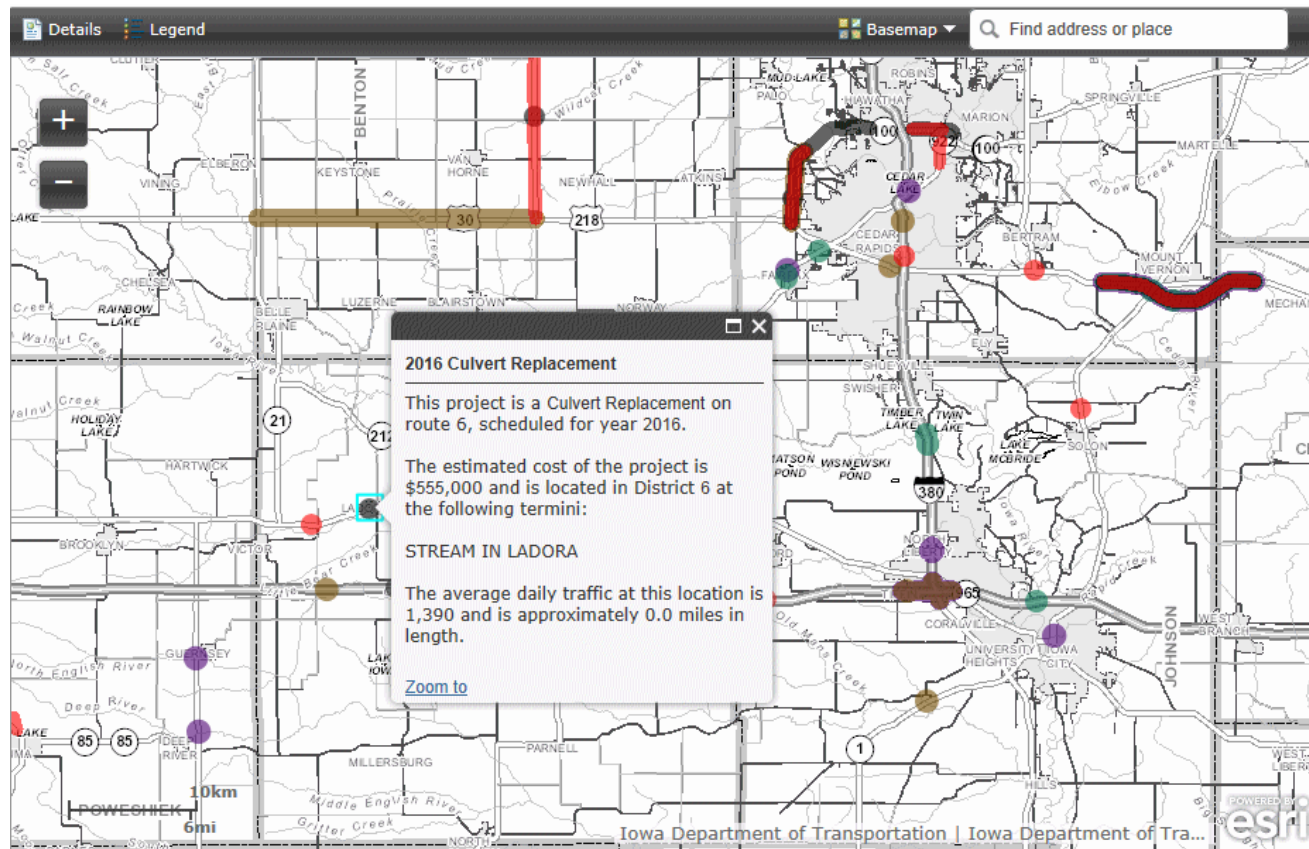
Asset Management Inventory

- Physical inventory is available (exception for culverts)
- Information is scattered
 - Pavement – HPMS or PaveM (FHWA/Agile-Oracle)
 - Bridge – Bridge Management System (Custom-Oracle)
 - Culverts – Culvert Inspection Program (Custom-Access)
 - ITS Elements – TMS Inventory/IMMS (FileMaker Pro)
- Need to integrate (not own) data for asset management purposes and overall efficiency.

Inventory Integration



Working Examples (Iowa)



Working Examples (Utah)

 ROADVIEW EXPLORER *HD* Q Search

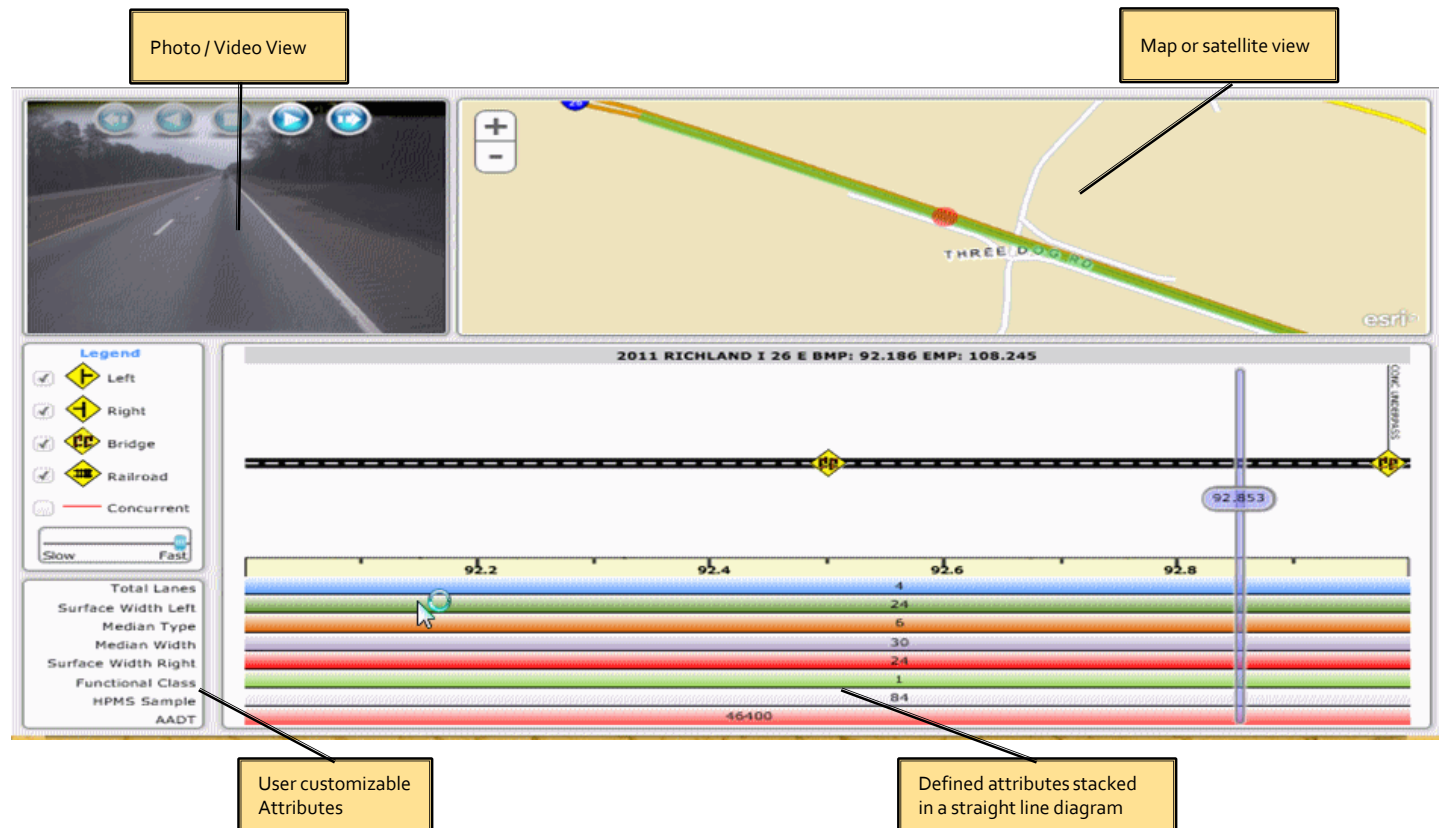


Play Speed Step Increment (1 Frames) Normal Mode: Click Image to Enter Zoom Mode

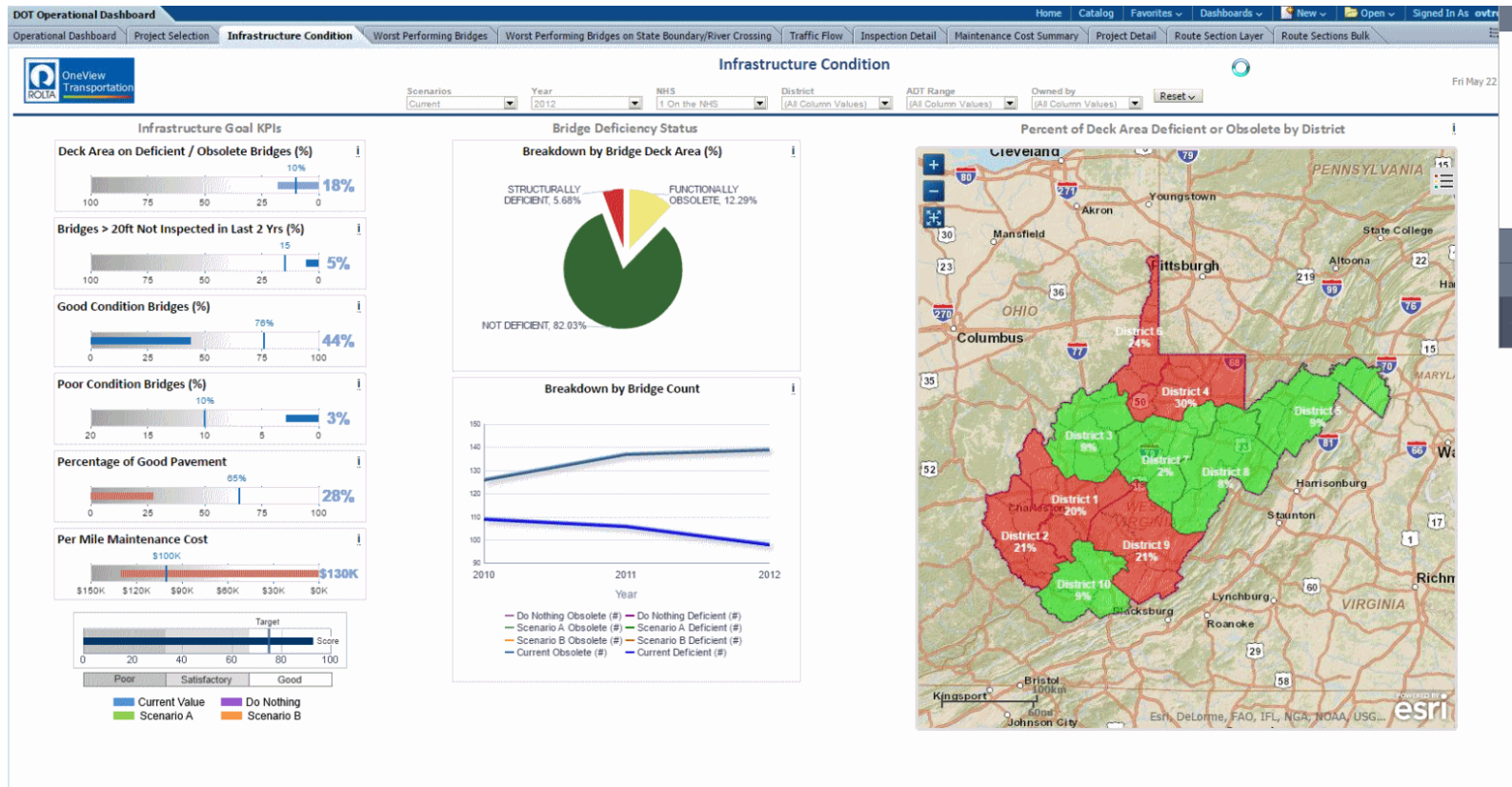
Route_Number: 0201 Direction: - Year: 2014 Region: 2 County_Name: SALT LAKE
Date Shot: 03/21/2014 SessionName: 0201_ Frame: 1910 UDOT_Mileage: 8.850 Mandl_Mileage: 8.704
Latitude: 40.71884010 Longitude: -112.06321980 Elev_ft: 4183

[Mainline Routes Page](#) [Ramps Page](#) ?

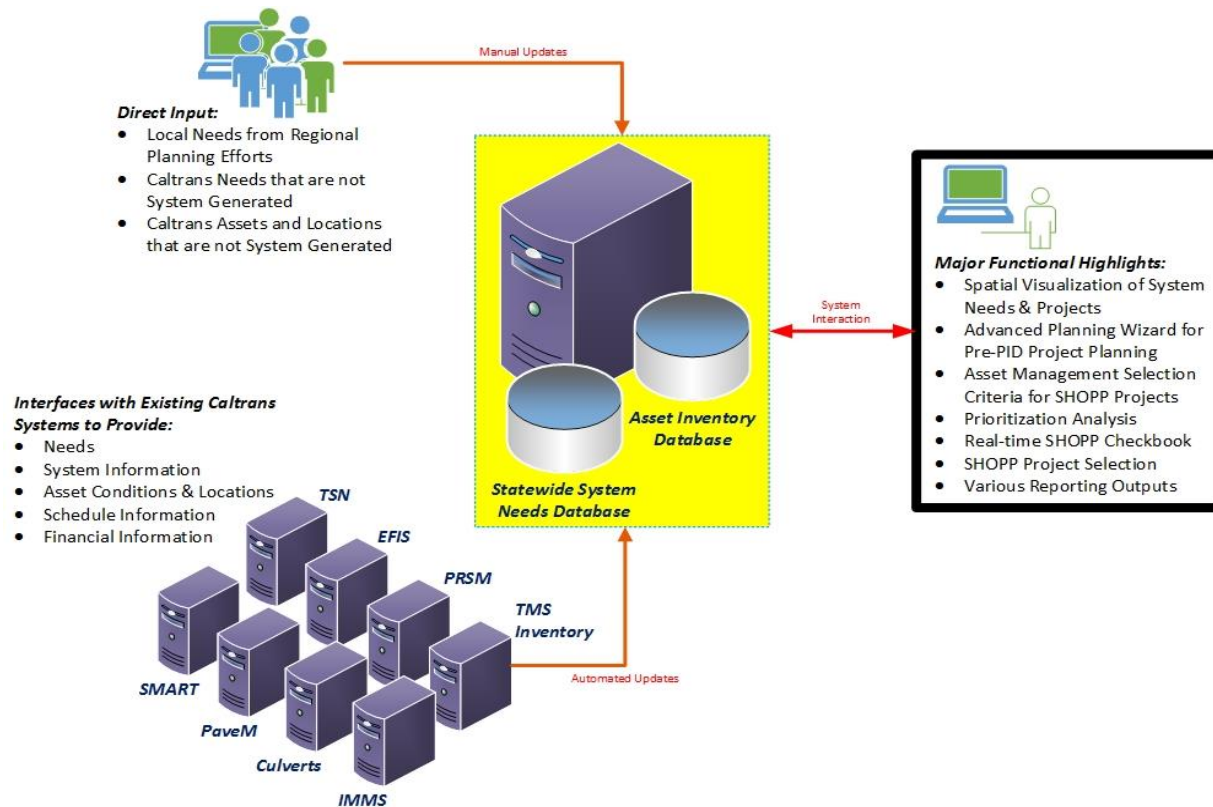
Inventory Integration (ESRI)



Asset Management Dash Boarding (West Virginia)



CT Enterprise Asset Management Software

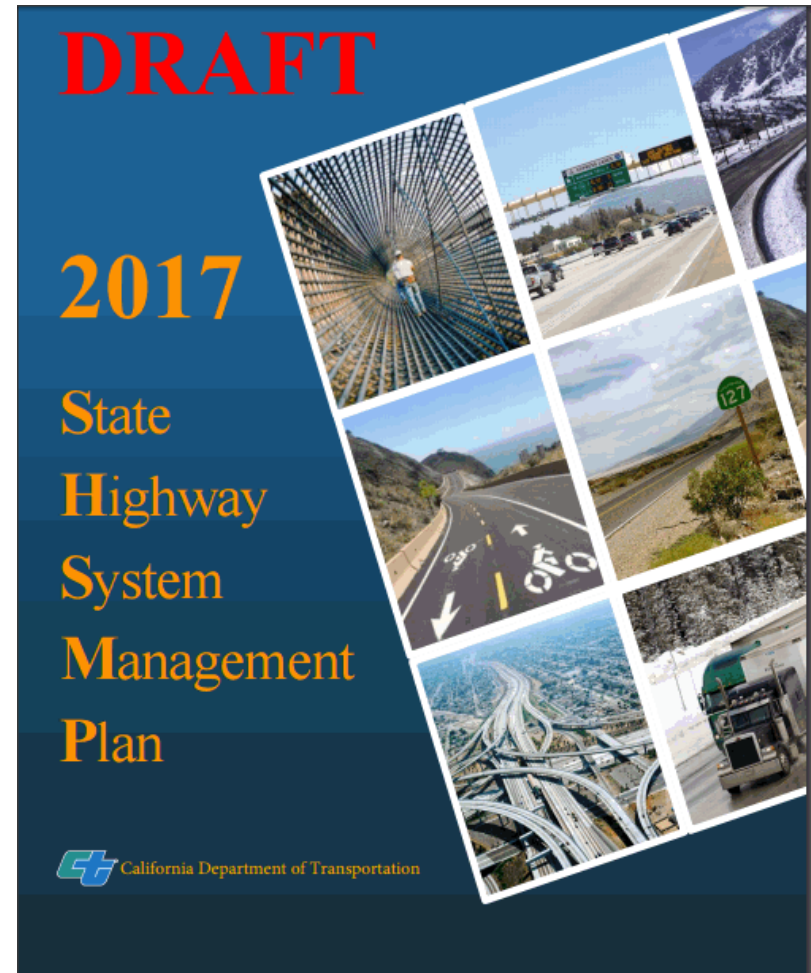


State Highway System Management Plan

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A Single Plan

- Integrates 10 Year SHOPP and 5 Year Maintenance Plans.
- Aligns objectives with CT Strategic Plan
- Implements Performance Management
- Unprecedented Transparency



Reorganization of SHOPP Objectives

● Safety Goal

- Bridge safety rail upgrades
- Collision severity reduction
- Roadside safety improvements
- Triggered safety improvements

● Sustainability Goal

- ADA Mitigation
- Advanced environmental mitigation
- Bridge resiliency
- Hazardous waste mitigation
- Roadside rehabilitation
- Storm water mitigation
- Zero emission vehicle infrastructure

● Stewardship Goal

- Pavement & Bridge Condition
- Culverts / Pump facilities
- Major damage / Perm restoration
- Facilities (all types)
- Signs and Lighting rehabilitation
- Roadside rest rehabilitation

● System Performance Goal

- Commercial vehicle enforcement facilities
- Operational improvements
- Sign panel replacements
- Transportation management systems
- Bridge goods movement upgrades
- Weigh scales

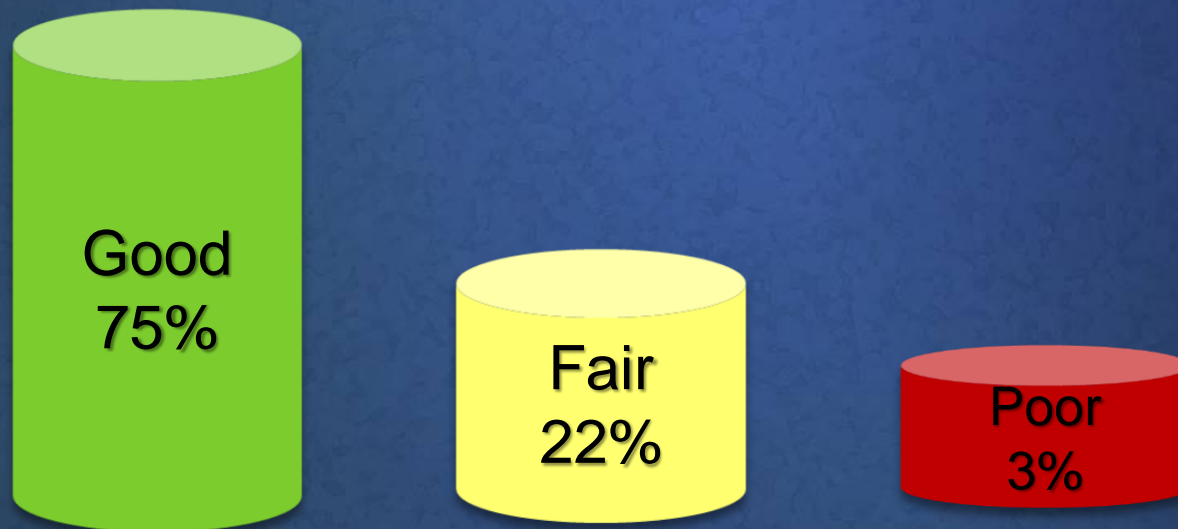
Performance Management



Performance Management

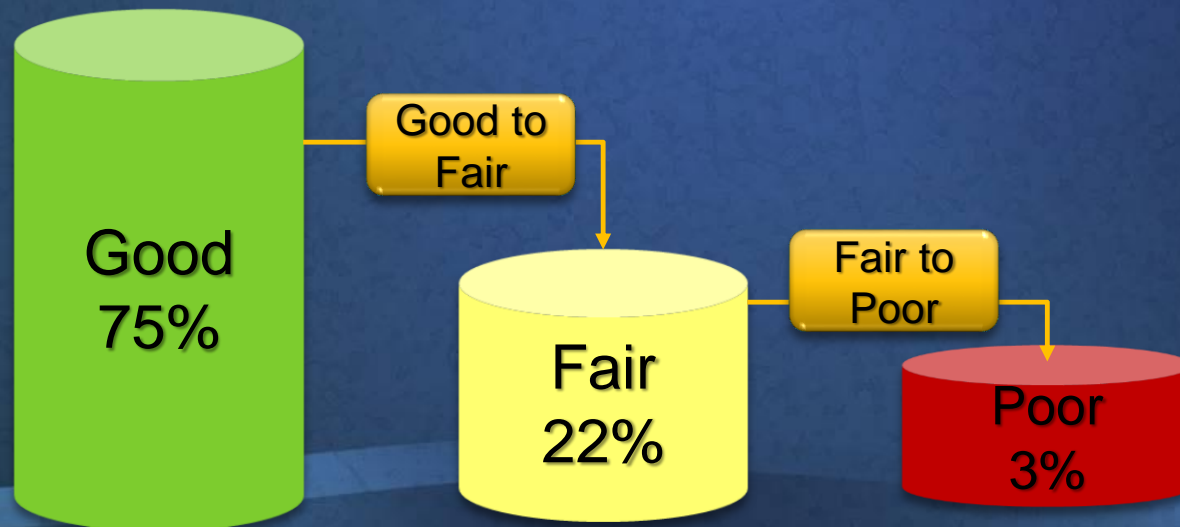
Physical Assets

- Current Condition Distribution (Bridges)



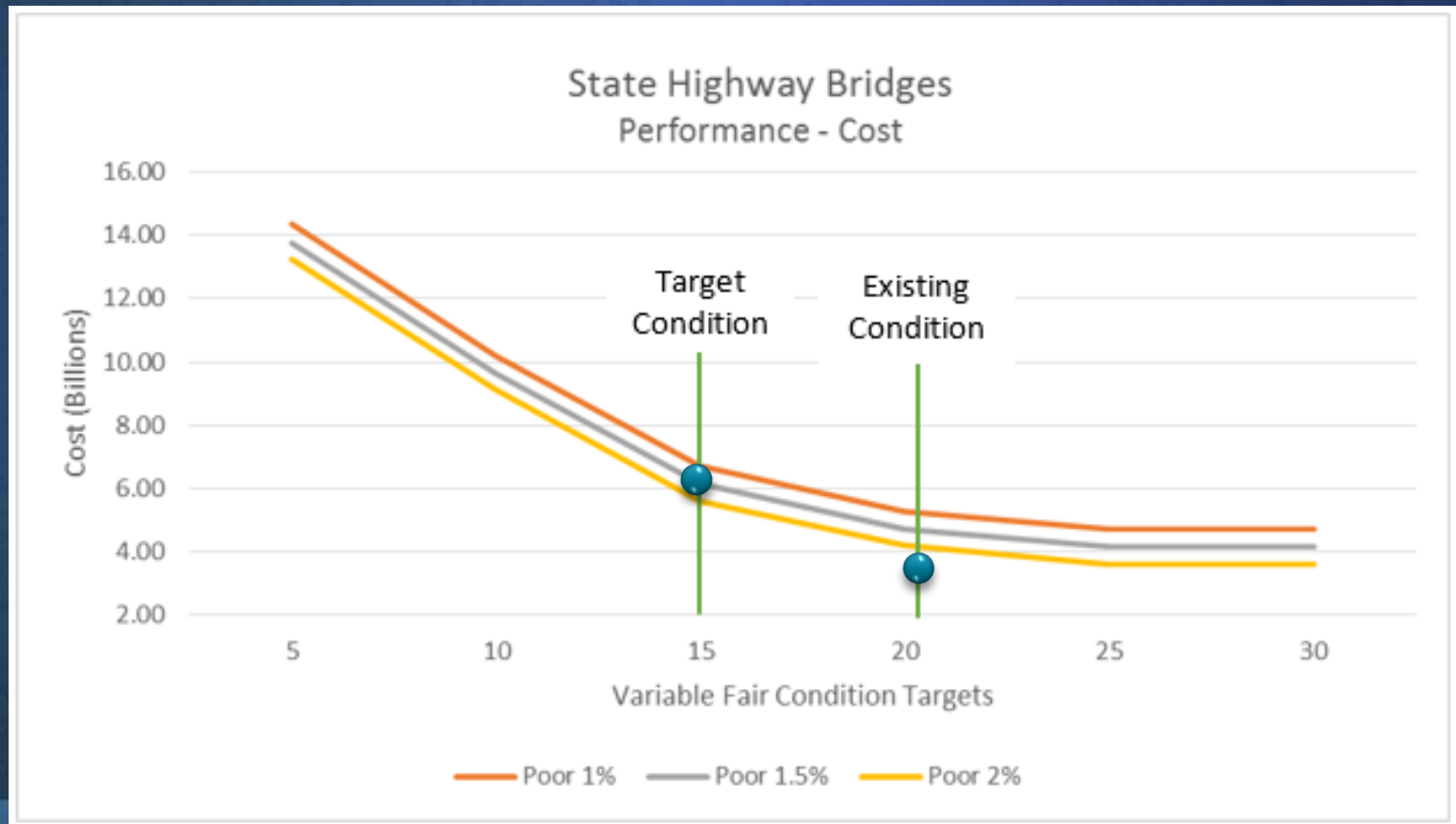
Performance Management Physical Assets

- Include Deterioration Rates
 - Use individual management systems
 - Use service life estimates / published research
 - Expert judgement



Performance Management Physical Assets

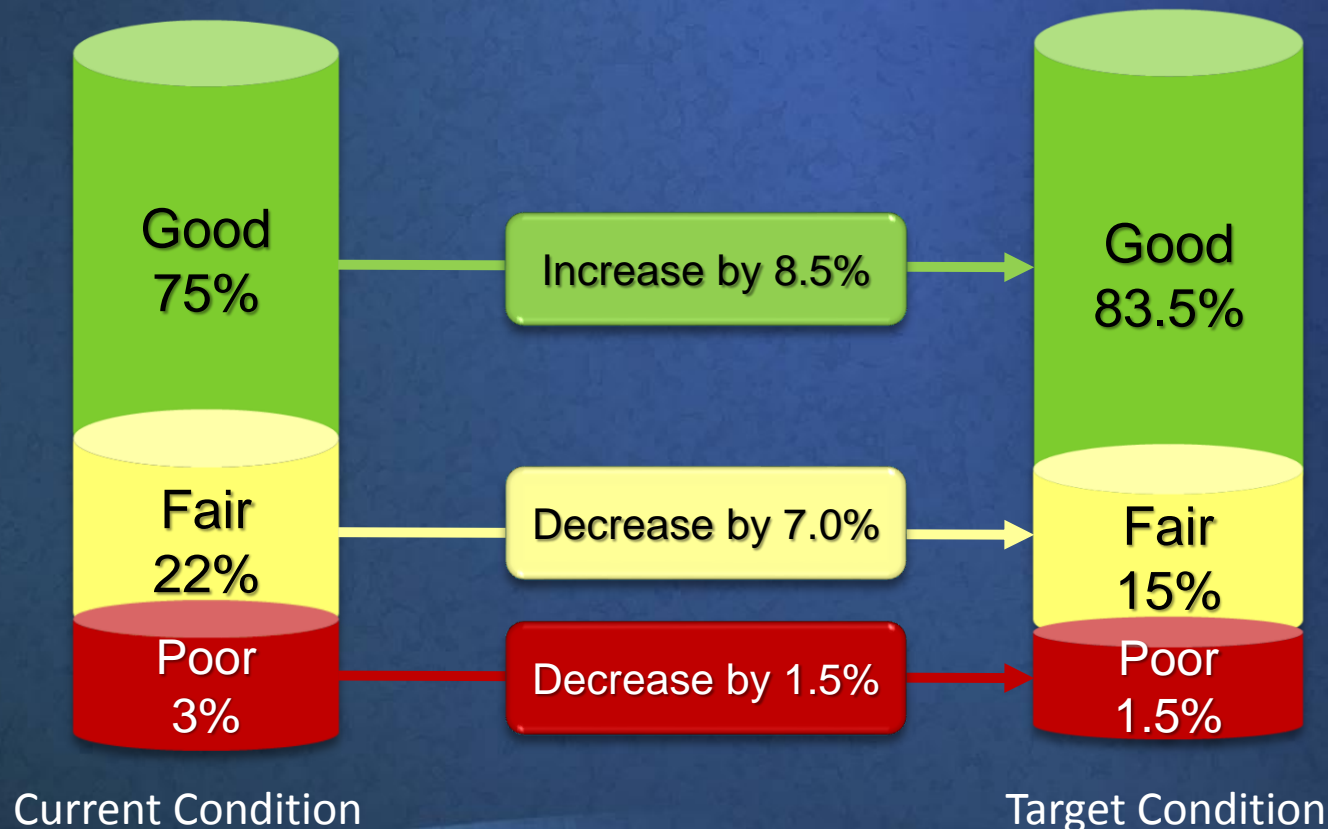
- Establish Condition Targets



Performance Management

Physical Assets

- Determine Performance Gaps



Performance Management

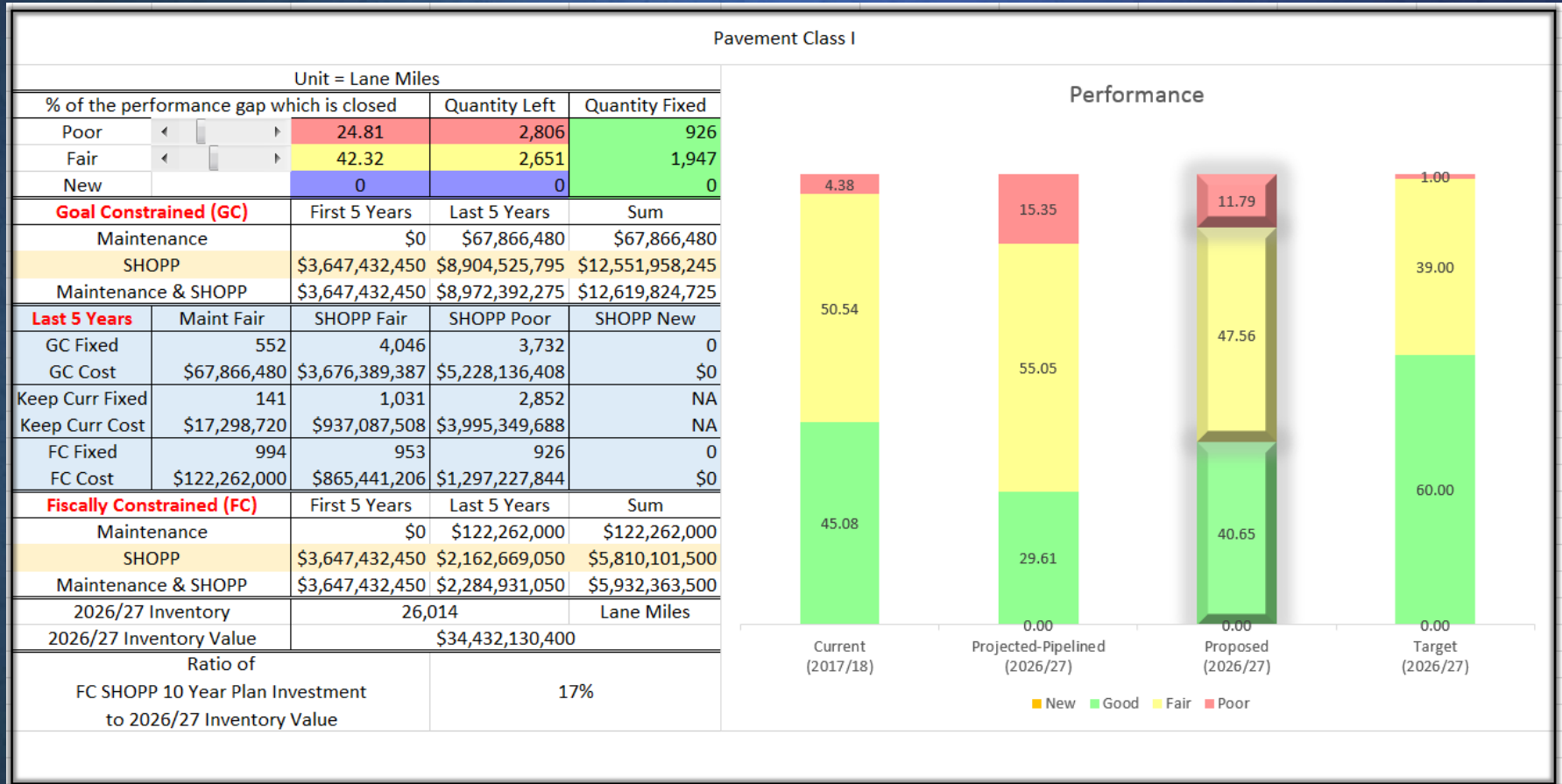
Physical Assets

- Deduct Pipelined Work
 - Existing project commitments need to be deducted from the measured gaps
 - The remaining gaps are the unmet need

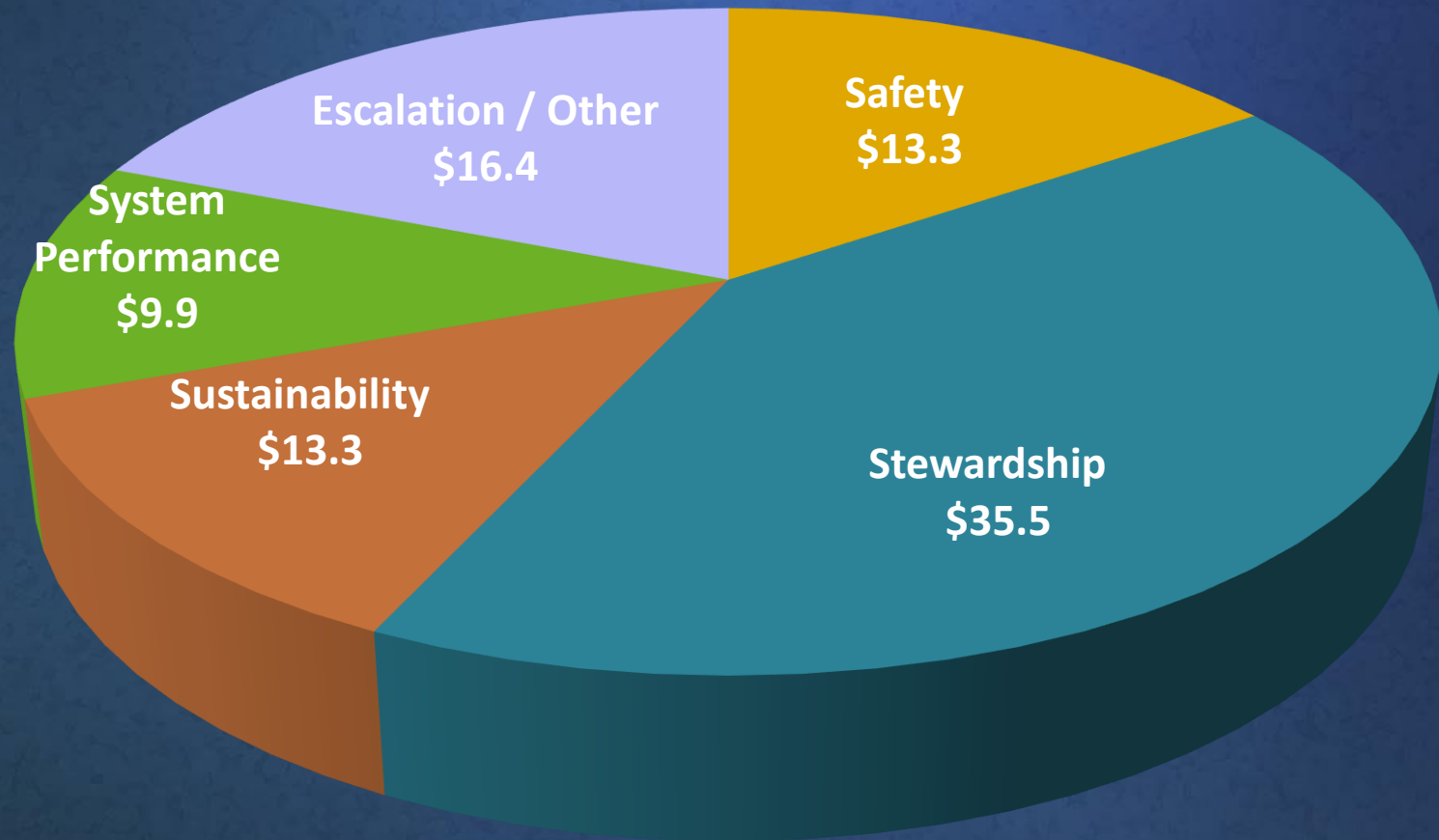
Performance Management

- Estimate costs
 - The unconstrained costs to close the performance gaps were estimated
 - Unconstrained needs exceed available funding
 - A constrained investment plan was required

Performance Management Analysis Tool



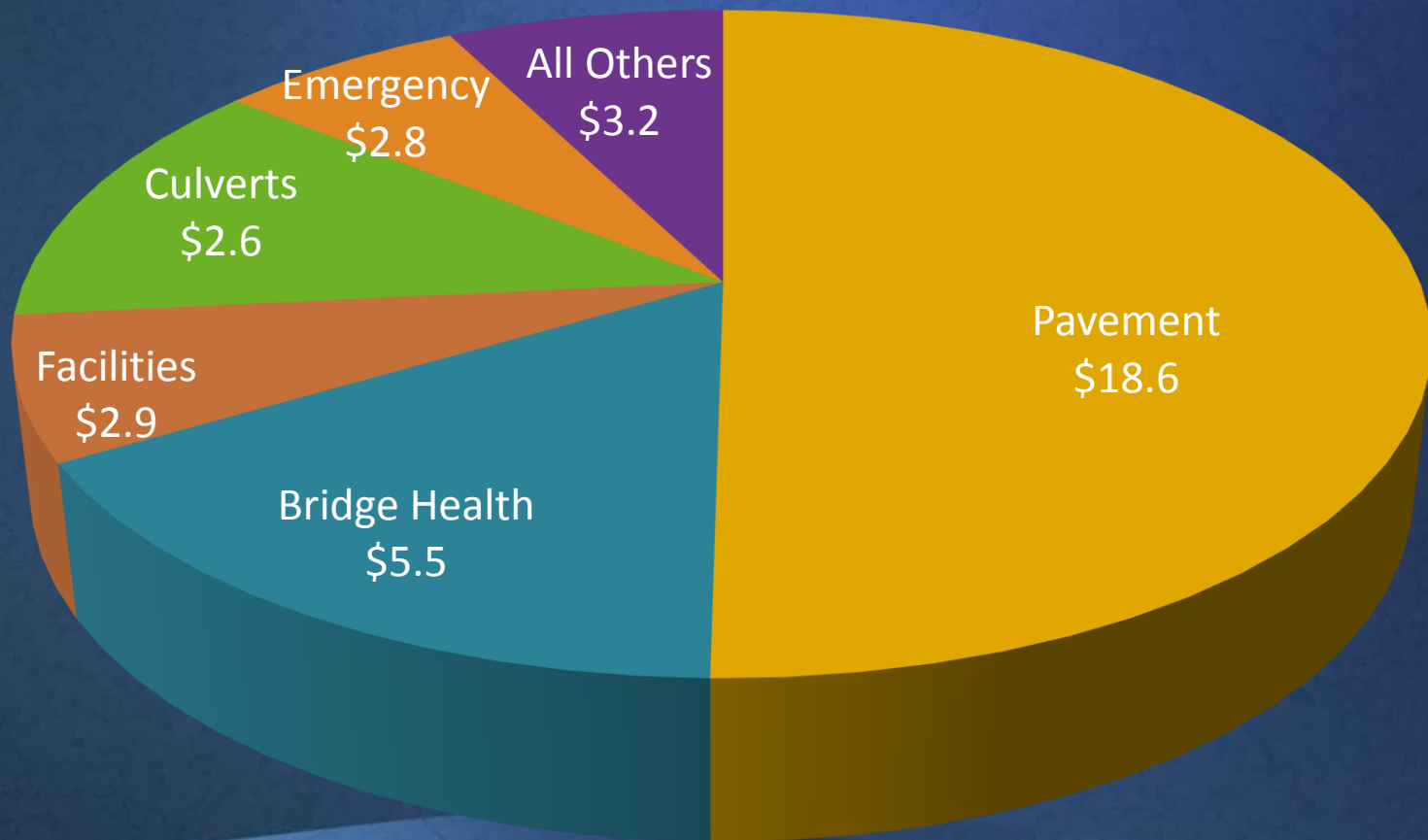
SHOPP Needs Assessment - \$86.5 B



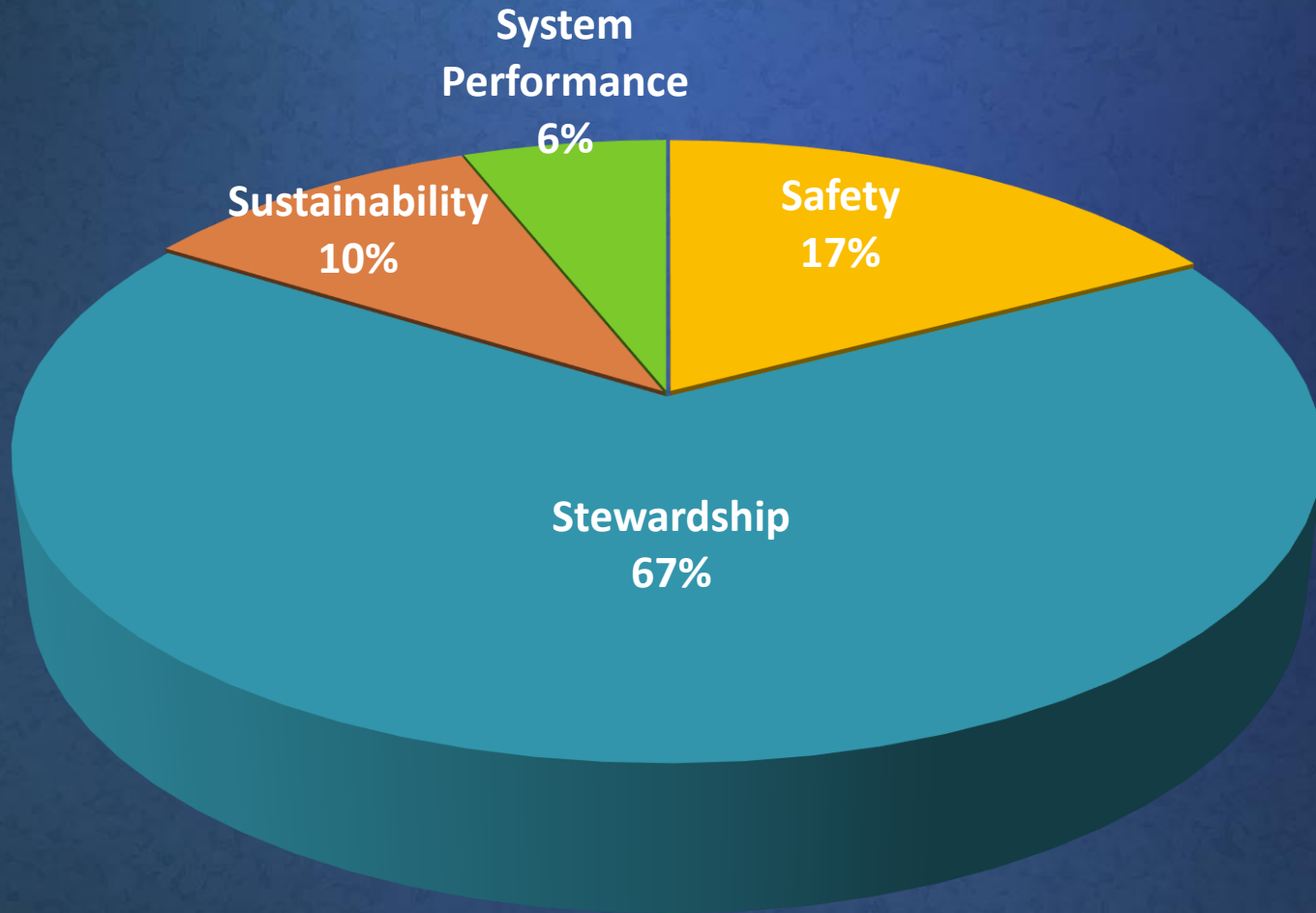
SHOPP Stewardship Needs

(Unescalated)

10 Year Needs (Billions)



SHOPP Investment Plan- \$26.6 B



District Performance Plans

SHOPP Performance Plan - District 11																			
Objectives	Unit	Current Inventory / Need	Current Condition			SHOPP Investment Plan									Projected Condition 2027			Poor % 2027	
			Good	Fair	Poor	Pipelined Projects			Remaining Performance			Sum			Good	Fair	Poor	District	State
						Fair	Poor	New	Fair	Poor	New	Fair	Poor	New					
Safety																			
Bridge Rail Replacement and Upgrade	Linear Feet	945,635	606,372	324,340	14,923	7,168	7,311	-	0	837	-	7,168	8,148	-	621,688	317,172	6,775	0.7%	4.7%
Collision Severity Reduction	Injuries	4,827	-	-	4,827	-	47	-	-	349	-	-	396	-	396	-	4,431	91.8%	91.4%
Roadside Safety Improvements	Locations	2,263	-	-	2,263	-	433	-	-	609	-	-	1,042	-	1,042	-	1,221	54.0%	49.3%
Safety Improvements	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Stewardship																			
Bridge Health	SF	25,492,125	19,180,734	5,466,834	844,557	1,292,863	559,368	-	477,143	312,820	-	1,770,006	872,188	-	20,959,795	4,149,948	382,382	1.5%	1.5%
Drainage Pump Plants	Locations	5	4	1	0	0	0	-	0	0	-	0	0	-	3	2	0	0.0%	9.3%
Drainage System Restoration	Linear Feet	1,541,632	1,156,849	273,583	111,200	170	12,008	-	0	76,665	-	170	88,673	-	1,739,281	893,084	303,013	10.3%	10.6%
Lighting Rehabilitation	Each	6,574	3,476	2,852	246	0	0	-	0	437	-	0	437	-	3,291	1,974	1,309	19.9%	39.9%
Major Damage (Emergency Opening)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Major Damage (Permanent Restoration)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Office Buildings	SF	0	0	0	0	0	0	-	0	0	-	0	0	-	0	0	0	0.0%	25.9%
Overhead Sign Structures Rehabilitation	Each	2,228	1,719	483	26	0	0	-	0	70	-	0	70	-	1,481	537	210	9.4%	11.4%
Pavement Class I	Lane Miles	2,741	557	2,138	46	576	16	-	626	171	-	1,202	187	-	1,553	1,161	27	1.0%	1.0%
Pavement Class II	Lane Miles	1,041	242	767	32	82	5	-	133	247	-	215	252	-	493	527	21	2.0%	2.0%
Pavement Class III	Lane Miles	375	154	213	8	0	0	-	18	35	-	18	35	-	75	292	8	2.1%	2.0%
Relinquishments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roadway Protective Betterments	Locations	0	-	-	0	-	0	-	-	0	-	-	0	-	0	-	0	0.0%	71.4%
Safety Roadside Rest Area (SRRA) Rehabilitation	Locations	6	4	2	0	0	0	0	0	0	0	0	0	0	1	3	2	33.3%	51.2%
Transportation Related Facilities	SF	216,712	0	159,669	57,043	0	0	0	0	7,255	-	0	7,255	0	7,255	79,834	129,623	59.8%	65.1%
Water and Wastewater Treatment at SRRAs	Locations	1	1	0	0	0	0	-	0	0	-	0	0	-	0	1	0	0.0%	11.1%
Sustainability																			
ADA Pedestrian Infrastructure	Locations	12,567	-	-	12,567	-	463	-	-	257	-	-	720	-	720	-	11,847	94.3%	92.7%
Advance Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bridge Scour Mitigation	SF	1,798	-	-	1,798	-	1,798	-	-	0	-	-	1,798	-	1,798	-	18,883	91.3%	51.1%
Bridge Seismic Restoration	SF	319,268	-	-	319,268	-	96,391	-	-	18,828	-	-	115,219	-	115,219	-	365,692	76.0%	73.1%
Hazardous Waste Mitigation	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roadside Rehabilitation	Acre	4,407	881	1,322	2,204	0	0	-	0	106	-	0	106	-	632	879	2,985	66.4%	59.4%
Storm Water Mitigation	Acre	1,760	-	-	1,760	-	111	-	-	336	-	-	447	-	447	-	1,313	74.6%	71.0%
Zero Emission Vehicle Infrastructure	Locations	2	-	-	2	-	0	-	-	2	-	-	2	-	2	-	0	0.0%	0.0%
Performance																			
Commercial Vehicle Enforcement Facilities	Stations	7	0	7	0	0	0	-	0	1	-	0	1	-	1	3	3	42.9%	31.5%
Operational Improvements	DVHD	90,000	-	-	90,000	-	612	-	-	1,258	-	-	1,870	-	1,870	-	88,130	97.9%	97.6%
Sign Panel Replacement	Each	6,878	0	0	6,878	0	1,963	-	0	885	-	0	2,848	-	2,848	0	4,030	58.6%	74.6%
Transportation Management Systems	Each	1,578	946	0	632	0	80	20	0	836	30	0	916	50	1,465	0	163	10.0%	10.0%
Bridge Goods Movement Upgrades	SF	25,492,126	22,438,945	1,365,864	1,687,317	0	0	-	0	0	-	0	0	-	22,438,945	1,365,864	1,687,317	6.6%	12.2%
Weigh-In-Motion Scales	Stations	21	0	21	0	1	0	0	0	4	0	1	4	0	5	9	7	33.3%	31.8%
Investment Plan Target*									\$2,054,125,745										
(*) The Investment Plan Target includes the estimated SHOPP cost of the Remaining Performance AND additional funding for project-level cost anomalies, Complete Streets elements, etc.																			

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Thank You